



UNITED STATES PATENT AND TRADEMARK OFFICE

ml

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,757	06/27/2003	Yao Wang	EMC-01-141CIP2	7174
24227	7590	03/09/2007		
EMC CORPORATION OFFICE OF THE GENERAL COUNSEL 176 SOUTH STREET HOPKINTON, MA 01748			EXAMINER ADAMS, CHARLES D	
			ART UNIT	PAPER NUMBER
			2164	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/09/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/608,757	Applicant(s) WANG ET AL.	
	Examiner Charles D. Adams	Art Unit 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. In response to communications filed on 18 December 2006, claims 1, 6, 9-10, 13-14, and 17 are amended. Claims 1-17 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sicola et al. (US Pre-Grant Publication 2004/0064639) in view of Choquier et al. (US Patent 6,961,681).

As to claim 1, Sicola et al. teaches:

A data transfer server (see paragraphs [0049] and [0054]);

A software agent, designated as a primary software agent, in communication with at least one of the two data storage systems and the data transfer server, the agent configured for performing data transfer operations in response to commands from the data transfer server (see paragraph [0049], "storage array controllers", and [0058], "remote copy set operation". Also see paragraph [0050], which teaches that 'host' and 'disaster-tolerant' paths);

One or more failover software agents in communication with the primary software agent, the data transfer server, and at least one of the two data storage systems, the failover software agents being remote from the primary software agent (see paragraphs [0049]-[0051] and Figure 2. All storage subsystems and all hosts are visible to each other over the SAN. Therefore, as they are connected by various network components, they are remote);

Sicola et al. does not explicitly teach a failover protocol for determining an order;

Choquier et al. teaches a failover protocol for determining and order (see column 8, lines 11-18);

Sicola et al. as modified teaches within a communication path of the data transfer (see Sicola et al. paragraphs [0049]-[0052] and Figure 2) are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined (see Choquier et al. column 8, lines 11-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sicola et al. by the teaching of Choquier et al., since Choquier et al. teaches "this enables the election protocol for selecting a new controller to be straightforward" (see 8:18-20).

As to claim 2, Sicola et al. as modified teaches wherein the data transfer operation is a replication of data within the data storage environment (see Sicola et al. paragraph [0058]).

As to claim 3, Sicola et al. as modified teaches wherein server commands to the software agents are sent over a network in accordance with an IP protocol (see Sicola et al. paragraph [0053]. An "Internet Link" would inherently use an "IP protocol").

As to claim 4, Sicola et al. as modified teaches wherein the software agents communicate with the at least one data storage system over the network in accordance with a Fibre Channel protocol (see Sicola et al. paragraph [0052]).

As to claim 5, Sicola et al. as modified teaches wherein a predetermined hierarchal relationship is followed by the data transfer server to select the order in which the failover software agents are commanded to take over the work of the one or more determined failed software agents (see Choquier et al. 8:11-18).

As to claim 6, Sicola et al. teaches:

A data replication management server (see paragraphs [0049] and [0054]);

A software agent, designated as primary software agent, in communication with at least one of the two data storage systems and the data replication management server, the primary software agent configured for performing data replication operations in response to commands from the data replication management server (see paragraph [0049], "storage array controllers", and [0058], "remote copy set operation". Also see paragraph [0050], which teaches that 'host' and 'disaster-tolerant' paths);

One or more failover software agents in communication with the primary software agent, the data replication management server, and at least one of the two data storage systems, the failover software agents being remote from the primary software agent (see paragraphs [0049]-[0051] and Figure 2);

Sicola et al. does not explicitly teach a failover protocol for determining an order

Choquier et al. teaches a failover protocol for determining an order (see 8:11-18);

Sicola et al. as modified teaches in which said software agents, within a communication path of the data transfer (see Sicola et al. paragraphs [0049]-[0052] and Figure 2), are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined (see Choquier et al. 8:11-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sicola et al. by the teaching of Choquier et al., since Choquier et al. teaches "this enables the election protocol for selecting a new controller to be straightforward" (see 8:18-20).

As to claim 7, Sicola et al. as modified teaches wherein server commands to the software agents are sent over a network in accordance with an IP protocol (see paragraph [0053]. An "Internet Link" would inherently use an "IP protocol").

As to claim 8, Sicola et al. as modified teaches wherein the software agents communicate with the at least one data storage system over the network in accordance with a Fibre Channel protocol (see paragraph [0052]).

As to claim 9, Sicola et al. as modified teaches wherein the data replication management server uses a predetermined hierarchal relationship to select the order in which designated ones of the failover software agents are commanded to take over the work of the one or more determined failed software agents (see Choquier et al. 8:11-18).

As to claim 10, Sicola et al. teaches a method for managing fault-tolerant resources for replication of data stored in a data storage environment including at least two data storage systems, and wherein data is replicated (see paragraph [0058]) from one of the at least two data storage systems to at least one other data storage system of the at least two data storage systems (see paragraph [0049]), and at least one software agent in communication with at least one data replication management server for managing the fault tolerant resources (see paragraph [0049]), the method comprising:

configuring one or more software agents as failover agents that are in remote communication with another software agent, designated as primary software agent, which is also in communication with the data replication management server, and at least one of the two data storage systems (see paragraph [0049], "storage array

Art Unit: 2164

controllers", and [0058], "remote copy set operation". Also see paragraph [0050]-[0051], which teaches that 'host' and 'disaster-tolerant' paths. The communications take place over a network);

Sicola et al. does not teach establishing a failover protocol for determining an order

Choquier et al. teaches establishing a failover protocol for determining an order (see Choquier et al. 8:11-18)

Sicola et al., as modified teaches in which said software agents, within a communication path of the data transfer (see Sicola et al. paragraphs [0049]-[0052] and Figure 2), are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined (see Choquier et al. 8:11-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sicola et al. by the teaching of Choquier et al., since Choquier et al. teaches "this enables the election protocol for selecting a new controller to be straightforward" (see 8:18-20).

As to claim 11, Sicola et al. as modified teaches wherein server commands to the software agents are sent over a network in accordance with an IP protocol (see paragraph [0053]. An "Internet Link" would inherently use an "IP protocol").

As to claim 12, Sicola et al. teaches wherein the software agents communicate with the at least one data storage system over the network in accordance with a Fibre Channel protocol (see paragraph [0052]).

As to claim 13, Sicola et al. as modified teaches wherein the data replication management server uses a predetermined hierarchal relationship to select the order in which designated ones of the failover software agents is commanded to take over the work of the one or more determined failed software agents (see Choquier et al. 8:11-18).

As to claim 14, Sicola et al. as modified teaches:

A data replication management server (see paragraphs [0049] and [0054]);

A software agent, designated as primary software agent, in communication with at least one of the two data storage systems and the data replication management server, the primary software agent configured for performing data replication operations in response to commands from the data replication management server (see paragraph [0049], "storage array controllers", and [0058], "remote copy set operation". Also see paragraph [0050], which teaches that 'host' and 'disaster-tolerant' paths);

One or more failover software agents in communication with the primary software agent, the data replication management server, and at least one of the two data storage systems, the failover software agents being remote from the primary software agent (see paragraphs [0049]-[0051] and Figure 2); and

Sicola et al. does not explicitly teach a computer-executable program for carrying out a failover protocol for determining an order

Choquier et al. teaches a computer-executable program for carrying out a failover protocol for determining an order (see Choquier et al. 8:11-18)

Sicola et al. as modified teaches in which said software agents, within a communication path of the data transfer (see Sicola et al. paragraphs [0049]-[0052] and Figure 2), are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined (see Choquier et al. 8:11-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sicola et al. by the teaching of Choquier et al., since Choquier et al. teaches "this enables the election protocol for selecting a new controller to be straightforward" (see 8:18-20).

As to claim 15, Sicola et al. as modified teaches wherein server commands to the software agents are sent over a network in accordance with an IP protocol.

As to claim 16, Sicola et al. as modified teaches wherein the software agents communicate with the at least one data storage system over the network in accordance with a Fibre Channel protocol.

As to claim 17, Sicola et al. as modified teaches wherein the data replication management server uses a predetermined hierarchal relationship to select the order in which designated ones of the failover software agents are commanded to take over the work of the one or more determined failed software agents (see Choquier et al. 8:18-20).

Response to Arguments

4. Applicant's arguments filed 18 December 2006 have been fully considered but they are not persuasive.

Applicant argues that Sicola et al. fails to teach using a failure protocol for determining an order in which said software agents are designated to take over the data transfer operation in response to one or more data transfer commands when a failure of one or more of said software agents is determined. In response to this argument, Examiner notes that Choquier et al. is relied upon to teach this feature.

Applicant further argues that, even if the teachings of Sicola et al. and Choquier et al. were combined, the combined device fails to disclose that the order of the selection of failover servers is further depending upon the selected server being within the communication path of the data transfer. Examiner notes that there is no mention of a selected server in the claims, and also notes that Sicola et al. does teach wherein the failover software agents exist within a communication path of the data transfer (see Sicola et al. Figure 2 and paragraphs [0049]-[0051]. A network connects the components of Sicola et al.).

Art Unit: 2164

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Adams whose telephone number is (571) 272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Charles Adams
AU2164

cy

Cammy
primary Examiner
Cam Y. Truong